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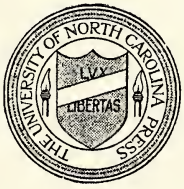
JUNE, 1935 NUMBER 297

THE UNIVERSITY OF NORTH CAROLINA RECORD

THE ONE HUNDRED AND FORTY-FIRST SESSION



CATALOGUE
OF THE
SCHOOL OF PHARMACY
1934-1935

Announcements for the Session
1935-1936

THE UNIVERSITY OF NORTH CAROLINA PRESS
ISSUED IN OCTOBER, DECEMBER, MARCH, APRIL, MAY, AND JUNE
BY THE UNIVERSITY OF NORTH CAROLINA
ENTERED AS SECOND-CLASS MATTER AT THE POSTOFFICE AT
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CATALOGUE OF EVENTS

Session, 1935-1936

1935

June 13-July 24	Summer Session, First Term.
July 25-August 31	Summer Session, Second Term.
Sept. 16	*Monday.* Entrance Examinations.
Sept. 16-17	*Monday and Tuesday.* Examination to remove condition grades.
Sept. 16-19	*Monday through Thursday.* Freshman Week.
Sept. 18	*Wednesday.* Registration of Freshmen for the fall quarter.
Sept. 19	*Thursday.* Registration (all except Freshmen) for the fall quarter.
Sept. 20	*Friday.* Class work for the fall quarter begins.
Oct. 12	*Saturday.* University Day.
Nov. 27	*Wednesday.* Thanksgiving Recess begins (1:00 p.m.).
Dec. 2	*Monday.* Thanksgiving Recess ends (8:30 a.m.).
Dec. 11-20	*Wednesday to 1 p.m. Friday of following week.* Registration for the winter quarter.
Dec. 17-20	*Tuesday through Friday.* Examinations for the fall quarter.
Dec. 20 (afternoon)-Jan. 1, 1936	Christmas Recess.

1936

Jan. 2	*Thursday.* Registration of new students.
Jan. 3	*Friday.* Class work for the winter quarter begins.
Mar. 6-14	*Friday to 1 p.m. Saturday of following week.* Registration for the spring quarter.
Mar. 11-14	*Wednesday through Saturday.* Examinations for the winter quarter.
Mar. 14-22	*Saturday afternoon through Sunday.* Spring Recess.
Mar. 23	*Monday.* Registration of new students.
Mar. 24	*Tuesday.* Class work for the spring quarter begins.
June 1-4	*Monday through Thursday.* Examinations for the spring quarter.
June 7-9	*Sunday through Tuesday.* Commencement Exercises.

THE SCHOOL OF PHARMACY

Frank Porter Graham, M.A., LL.D., D.C.L., D.Litt., *President.*
Robert Burton House, A.M., *Dean of Administration.*
John Grover Beard, Ph.G., Ph.M., *Dean.*

*THE ADMINISTRATIVE BOARD

William deBerniere MacNider, M.D., Sc.D., LL.D.
Dudley deWitt Carroll, M.A.
Henry Roland Totten, Ph.D.
Henry Matthew Burlage, Ph.D.
Ira Winfield Rose, Ph.G.
Marion Lee Jacobs, Ph.C., M.Sc.
Ralph Walton Bost, Ph.D.

The Special Staff of Instruction consists of those named above with the addition of other instructors in the Departments of English, French, German, Mathematics, Chemistry, Botany, Bacteriology, Pathology, and Economics and Commerce.

HISTORICAL SKETCH AND DESCRIPTION OF COURSES

In 1880 Dr. Thomas W. Harris was instrumental in establishing a Pharmacy School at the University in connection with the School of Medicine. Doctor Harris was Professor of Anatomy, Materia Medica, and Pharmacy. The course in pharmacy extended over two sessions of five months each, and led to the degree of Graduate in Pharmacy (Ph.G.). The school was continued until the resignation of Doctor Harris in 1886, when it was abandoned completely. In the fall of 1889 the school was revived by Dr. Richard H. Whitehead, but again its career was cut short.

In March of 1897 the present School of Pharmacy was established, and Edward Vernon Howell was elected Professor of Pharmacy, and given charge of the school. At that time the school occupied the ground floor of the New West Building. The first lectures were offered in September of 1897. The course of study extended over two sessions of nine months each and led to the degree of Graduate in Pharmacy (Ph.G.). In the summer of 1912 the school was moved to Person Hall.

In 1917 the school was admitted to membership in the American Association of Colleges of Pharmacy, an organization founded for the promotion of pharmaceutical education. Member-colleges must maintain certain entrance and graduation requirements and must in other ways follow out general practices as determined by the Association.

In order to comply with the Association's requirements the course of study leading to the degree of Graduate in Pharmacy was advanced

* The Dean of Administration, the Registrar, and the Dean of Students are *ex officio* members of each Administrative Board.

in 1925 from two to three years. A four-year course, administered by the School of Applied Science, was added leading to the degree of Bachelor of Science in Pharmacy (S.B. in Phar.). In September, 1932, both this and the three-year course were discontinued and in their stead was placed a baccalaureate course, administered by the School of Pharmacy, leading also to the degree of S.B. in Pharmacy.

In the fall of 1925 the School of Pharmacy moved into the building formerly occupied by the Department of Chemistry. The building is now known as the Howell Hall of Pharmacy. The school has gradually developed with respect to members of the faculty, equipment, and apparatus. The pharmaceutical library has been made valuable by many historical and modern books on pharmacy and its allied branches and by bound volumes of proceedings and journals, either given by friends or purchased by the University.

The School of Pharmacy recognizes that its graduates may be expected to pursue one or another of three related but definitely different forms of pharmaceutical practice. (1) They may become prescriptionists in or owners of retail drug stores; (2) they may elect to enter the field of medicinal manufacture; or (3) they may decide to establish technical laboratories or enter the U. S. Public Health Service. These different forms of effort require specialized types of training and the School has attempted to provide such specialization. Certain subject matter, however, is basically necessary regardless of what type of pharmaceutical career is to be followed and the School has accordingly set up a common course for its first and second years. At the beginning of the third year specialization begins through the election by the student of his preferred group of studies. The "A" group of courses is designed for students who expect to become practising retail pharmacists; the "B" group for students who will become manufacturing pharmaceutical chemists; and the "C" group for students who desire training as clinical technicians or who expect to apply for commissions in the U. S. Public Health Service.

By action of the Administrative Board of the School of Pharmacy the Dean of the School is authorized to allow substitutions of certain academic subjects for certain prescribed pharmaceutical courses in case of rising third year students who in his opinion have displayed by scholarship and general merit such a type of mind and character as to warrant their acceptance into a standard medical school.

REQUIREMENTS FOR ADMISSION

Men or women candidates for admission to the first year class are received by certificate from accredited schools or by examination. In either case evidence must be shown that the applicant is entitled to receive fifteen units of credit distributed as follows:

Bachelor of Science in Pharmacy

English	4 units	French or German or	
*Social Science	2 units	Latin	2 units
Algebra	1½ units	Electives to make total of	15 units
Plane Geometry	1 unit		

For detailed information concerning admission requirements address the Associate Registrar.

NOTE. Special course. A few students, who are more than twenty-one years of age and who in the judgment of the Dean are qualified to carry work of college grade, may be admitted for a one year special course of study without the regular requirements for admission. This course is intended to qualify students for license as assistant pharmacists.

EXPENSES

(A differential fee of $100 a year is charged students who are not *bona fide* residents of North Carolina. See general catalogue.)

Tuition	$ 28.34
**Matriculation	14.50
Student Publications	2.00
Laundry Deposit	8.50
Student Union fee	1.00
Total for each quarter	$ 54.34

LABORATORY FEES. Each student taking a laboratory course must pay, in addition to his tuition fee, a small fee for power or materials used in the laboratory. The number and total amount of the fees listed below will depend upon the curriculum chosen by each undergraduate or graduate student.

Bacteriology: 132, $6.00
Botany: 41, 42, 52, $4.00 each
Chemistry: 4, 5, $4.50 each; 31, 42, 71, 163, $10.00 each
Commerce: 61, $1.00; 71P, $3.00
Materia Medica: 391, 392, 393, $10.00 each
Pharmaceutical Chemistry: 70, $5.00; 161, 162, 163, $7.50 each; 62, 63, 71, 141, 172, 173, 242, 243, 245, 391, 392, 393, $10.00 each
Pharmacology: 55, $5.00
Pharmacy: 11, 13, 22, 23, 93, 191, 192, 193, $5.00 each; 91, 92, $7.50 each; 21, 94, 141, 144, 145, 146, 162, 261, 262, 263, 391, 392, 393, $10.00 each
Physics: 21, 22, 23, $2.75 each
Zoölogy: 41b, $5.00
GRADUATION FEE: $5.00

* One unit must be in history, American History recommended.
** This fee includes fee for physical education, the library fee, the fee for infirmary service, and the fee for debates.

Board

Excellent Board is furnished at Swain Hall for $22.50 a month to non-dormitory occupants, or $20.00 a month where student rooms in dormitory. This special combination rate is offered to encourage the full use of dormitory and Swain Hall facilities and to assure to students the highest standard of service.

Board without room can be obtained in the town from $22.50 to $35.00 a month.

Dormitory Accommodations (Men)

All rooms in the dormitories are completely furnished. Students will, however, provide their own pillows, bed linen (for single beds), blankets, and towels.

Room rent ranges from $5.25 to $10.00 a month for each occupant, the price depending upon the location of the room. This charge includes light, heat, and service. Rooms are leased for the scholastic year. Applications for such rooms should be directed to the Cashier of the University.

LOAN FUNDS

Loans covering tuition and other expenses are available. Application should be made to the Student Loan Fund office.

SCHOLARSHIPS

The scholarships listed below, valued at $85.00 each, are awarded only to the worthy and needy students of pharmacy who subscribe to the reasonable requirements laid down by the donors. Application for them must be made to the Dean of the School of Pharmacy on or before August first.

Richardson Scholarships. Three in number. Established by Messrs. H. S. and L. Richardson, of Greensboro.

Council Scholarships. Two in number. Established by Mr. C. T. Council, of Durham.

The Scott Drug Company Scholarship. Awarded by the Scott Drug Company, of Charlotte.

The W. H. King Drug Company Scholarship. Awarded by the W. H. King Drug Company, of Raleigh.

The Justice Drug Company Scholarship. Awarded by the Justice Drug Company, of Greensboro.

PRIZES

Lehn and Fink Gold Medal. This medal is given annually by Lehn and Fink of New York City.

The F. W. Hancock Prize. Mr. F. W. Hancock, of Oxford, offers annually a prize of a gold watch, suitably engraved, to that member of the graduating class who has achieved the highest scholastic rating.

SELF HELP

Every effort is made to provide needy students with various forms of work. For information apply to the University Self Help Bureau.

ATTENDANCE

Regular attendance is a student obligation. The maximum number of unexcused absences shall not exceed, during any quarter, the number of weekly meetings of any class. When this maximum has been incurred the student shall be placed on attendance probation and in case of additional unexcused absence from any class, the student may be suspended from the University.

PROMOTION

Students of pharmacy, in order to be eligible to continue in the University, must qualify according to the following requirements: A first year student must pass one subject in the first quarter, in the first two quarters at least ten quarter hours, and by the end of the third quarter at least twenty-five quarter hours. After the first year (three quarters) a student must pass at least ten quarter hours each quarter. Deficiencies may be made up by correspondence work or in summer school, in which case only credits exceeding five quarter hours credit so obtained shall count for re-admission.

No student may be admitted to the third year if any subject of the first year has not been completed.

In order to be recommended for the degree of Bachelor of Science in Pharmacy the student must have completed one of the four year courses of study outlined below. A student who has completed one or more years of accredited work in a recognized school of Pharmacy and submits satisfactory evidence of having completed the entrance requirements and courses equivalent to those prescribed in the curriculum required for the degree of S.B. in Pharmacy, may be admitted with advanced standing and proceed for this degree.

A student must obtain satisfactory marking in attendance, making a grade of D or better in each course.

Curricula Leading to the Degree of Bachelor of Science in Pharmacy

First Year

Fall Quarter: Chemistry 4, English 1, Mathematics 1, Pharmacy 11.

Winter Quarter: Chemistry 5, English 2, Mathematics 2, Pharmacy 10, Pharmacy 12.

Spring Quarter: Chemistry 31, English 3, Mathematics 3, Pharmacy 13.

Second Year

Fall Quarter: Botany 41, *Elective, Pharmacy 21.

Winter Quarter: Botany 42, Pharmacy 22, Zoölogy 41.

Spring Quarter: Chemistry 42, Materia Medica 51, Pharmacy 23, Physiology 23.

* NOTE: This elective must be approved by the Dean.

CURRICULUM A

Third Year

Fall Quarter: †Economics 31, Materia Medica 52, Pharmacology 55.

Winter Quarter: †Economics 32, Materia Medica 53, Pharmaceutical Chemistry 62, Pharmaceutical Chemistry 64.

Spring Quarter: Commerce 71P, English 51P, Pharmaceutical Chemistry 63.

Fourth Year

Fall Quarter: First Aid—Materia Medica 56, Pharmaceutical Chemistry 70, Pharmaceutical Chemistry 71, Pharmacy 90, Pharmacy 91.

Winter Quarter: Commerce 61 or 165, Pharmacy 92, Pharmacy 96, Elective.

Spring Quarter: Pharmacy 83, Pharmacy 93, Pharmacy 97, Pharmacy 99.

CURRICULUM B

Third Year

Fall Quarter: Materia Medica 52, Pharmacology 55, Physics 21.

Winter Quarter: Materia Medica 53, Pharmaceutical Chemistry 62, Pharmaceutical Chemistry 64, Physics 22.

Spring Quarter: Chemistry 71, English 51P, Pharmaceutical Chemistry 63, Physics 23.

Fourth Year

Fall Quarter: Chemistry 163, Pharmaceutical Chemistry 71, Pharmacy 91.

Winter Quarter: Botany 52, Pharmaceutical Chemistry 172, Pharmacy 92, Elective.

Spring Quarter: Pharmaceutical Chemistry 173, Pharmacy 83, Elective.

CURRICULUM C

Third Year

Fall Quarter: †Economics 31, Materia Medica 52, Pharmacology 55.

Winter Quarter: Botany 52, †Economics 32, Materia Medica 53, Pharmaceutical Chemistry 62.

Spring Quarter: Bacteriology 132, English 51P, Pharmaceutical Chemistry 63.

Fourth Year

Fall Quarter: Pharmaceutical Chemistry 71, Pharmacy 91, Elective.

† These courses in Economics meet five hours a week.

Winter Quarter: Pharmaceutical Chemistry 64, Pharmacy 92, Elective.

Spring Quarter: Pathology 212, Pharmacy 83, Pharmacy 93, Elective.

Graduate Work in Pharmacy

The degree of Master of Science in Pharmacy will be conferred on students who have satisfactorily completed approved graduate work extending over not less than one year. This course is administered by the Graduate School and information concerning it may be obtained by addressing the Dean of the Graduate School.

*COURSES OF INSTRUCTION

Materia Medica and Pharmacology

1. MATERIA MEDICA AND CHEMICAL PHARMACOLOGY. (3). For a description of this course see School of Medicine, Pharmacology 111.

23. PHYSIOLOGY. (3).
A study of the functions of the normal human body and a consideration of how these functions are modified by the action of drugs. Laboratory experiments are conducted by the instructor to demonstrate the more important physiological reactions of the lower animals, frogs, turtles, and cats. *Three hours a week, spring quarter.* Professors MacNider, Donnelly.

51-52. MATERIA MEDICA. (10). Prerequisite, Botany 41-42.
The individual drugs of the United States Pharmacopoeia and the National Formulary are considered from the standpoint of their origin, history, appearance, structure, active principles, chief medicinal properties, official preparations, and doses. These drugs are grouped and studied according to the families to which they belong. Later they are classified into therapeutic groups, based on their action. Textbooks and references to be assigned. Lectures and recitations. *Five hours a week, spring and fall quarters.* Professor Beard.

53. MATERIA MEDICA. (3). Prerequisite, Material Medica 51-52.
This course is to be considered as a continuation of Materia Medica 51-52. In addition to a more comprehensive study of vegetable and chemical drugs, consideration is given to the animal and biological products which are used in therapeutics. Lectures and recitations. Textbook: Gershenfeld's *Bacteriology and Sanitary Science. Three hours a week, winter quarter.* Professor Beard.

55. PHARMACOLOGY. (5). Prerequisite, Materia Medica 51, Physiology 23; corequisite, Materia Medica 52.
This course is concerned with the physiological and therapeutic action of drugs both upon man and upon lower animals. Prior to this work the student has completed Materia Medica 51 which is concerned with the study of the physical and chemical properties of drugs, their preparations, dosage, and a brief statement of their effect. This course in Pharmacology is intended to amplify and give in a more detailed fashion an understanding of the way in which the drug acts in normal and in toxic quantities. A consideration of the biological standardization of drugs is also a part of this course. Textbook: Bastedo's *Materia Medica, Pharmacology, and Therapeutics. Three lecture and four laboratory hours a week, fall quarter. Laboratory fee, $5.00.* Professors MacNider, Donnelly.

* The numbers in parenthesis following the descriptive titles indicate the credit values of the courses counted in quarter hours.

56. FIRST AID. (2).
This course in First Aid, intended for pharmacy students, will consist of temporary bandaging, methods for the control of hemorrhages, arterial and venous; the functions and use of caustics, styptics, compresses, and plasters; emergency use of hypodermics; procedure in cases of exhaustion, fainting, drowning, chills, exposure, poisoning, burns, and puncture wounds; pulse rate and temperature in all degrees of shock in considering a hurry call for a physician. Lectures and laboratory. *Two hours a week, fall quarter.* Professor Lawson.

391-392-393. RESEARCH IN MATERIA MEDICA AND PHARMACOGNOSY. (15).
These advanced courses consist of laboratory work, conferences with the major professor, and library investigations relating to research. The professor in charge is responsible for the assignment and approval of the subject and character of the thesis. *One lecture and nine laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professors Beard, Totten.

Pharmaceutical Chemistry

62-63. ORGANIC PHARMACEUTICAL CHEMISTRY. (12). Prerequisite, Chemistry 31.
A consideration of the aliphatic and aromatic series. Stress is placed on the compounds of pharmaceutical importance. *Three lecture and six laboratory hours a week, winter and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Jacobs; Assistant.

64. INORGANIC PHARMACEUTICAL CHEMISTRY. (5) Prerequisite, Chemistry 31.
A laboratory and lecture course designed to acquaint the student with the identification tests and general assays of the *United State Pharmacopoeia and National Formulary.* Textbook: Jenkins and DuMez' *Quantitative Pharmaceutical Chemistry. Two lecture and six laboratory hours a week, winter quarter. Laboratory fee, $5.00.* Professor Jacobs; Assistant.

70. BLOOD AND URINE ANALYSIS. (3). Prerequisite, Chemistry 42.
This course is designed to acquaint the student with the qualitative and quantitative analysis of blood and urine. Reference: Hawk and Bergeim's *Physiological Chemistry. One lecture and four laboratory hours a week, spring quarter. Laboratory fee, $5.00.* Professor Jacobs; Assistant.

71. ORGANIC PHARMACEUTICAL CHEMISTRY. (6). Prerequisite, Pharmaceutical Chemistry 62-63.
A study of the more important medicinal plant products and synthetic drugs. The laboratory work will consist of the isolation, purification, and identification of plant constituents and the synthesis of simple organic medicinal compounds. *Three lecture and six laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professor Jacobs; Assistant.

141. ADVANCED ORGANIC PHARMACEUTICAL CHEMISTRY. (6). Prerequisite, Pharmaceutical Chemistry 62-63 or equivalent.
A study of the more complex organic compounds used in medicine, emphasizing the structure, chemical relationship, and synthesis of these compounds. *Three lecture and six laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professor Jacobs.

172. PHARMACEUTICAL ANALYSIS. (5). Prerequisite, Pharmaceutical Chemistry 64.
A laboratory course supplemented by lectures emphasizing the more advanced and special assay methods of the *United States Pharmacopoeia* and

National Formulary. Two lecture and six laboratory hours a week, winter quarter. Laboratory fee, $10.00. Professor Jacobs; Assistant.

173. FOOD AND DRUG ANALYSIS. (5). Prerequisite, Pharmaceutical Chemistry 172.

A laboratory and lecture course dealing with the methods employed by government laboratories to control food and drug products. *Two lecture and six laboratory hours a week, spring quarter. Laboratory fee, $10.00.* Professor Jacobs; Assistant.

242-243. ADVANCED ORGANIC PHARMACEUTICAL CHEMISTRY. (10). Prerequisite, Pharmaceutical Chemistry 141 or equivalent.

A study of the complex synthetic organic medicinal products. Their structure, synthesis, and properties are considered. *One lecture and eight laboratory hours a week, winter and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Jacobs.

245. ADVANCED TOXICOLOGY. (5). Prerequisite, Pharmaceutical Chemistry 62-63 or equivalent.

The medico-legal aspects of toxicology are considered with particular emphasis on the identification of poisons in cadaverous material. *Two lecture and six laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professor Jacobs.

391-392-393. RESEARCH IN PHARMACEUTICAL CHEMISTRY. (15).

Statements regarding Materia Medica 391-392-393 apply to this course. *One lecture and nine laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Jacobs.

Pharmacy

10. PHARMACEUTICAL MATHEMATICS. (3).

It is the purpose of this course so to relate arithmetic and mathematics to pharmacy as to make certain that students can solve correctly the scientific problems met with in dispensing as well as the merchandising calculations that arise in drug store practice. Textbook: Sturmer's *Pharmaceutical Arithmetic. Three hours a week, winter quarter.* Professor Beard.

11. PHARMACEUTICAL TECHNIQUE. (5).

Lectures deal with the theory and practice of pharmacy. The laboratory acquaints the student with the fundamental manipulations involved. Textbooks: *United States Pharmacopoeia; National Formulary. Three lecture and four laboratory hours a week, fall quarter. Laboratory fee, $5.00.* Professor Burlage; Assistants.

12. PHARMACEUTICAL LATIN. (2).

A certain modicum of Latin is absolutely essential to the understanding of pharmaceutical terminology and to the proper handling of prescriptions. It is the purpose of this course to provide exactly that modicum. Textbook: Howe and Beard's *Latin for Pharmacists. Two hours a week, winter quarter.* Professor Beard.

13. PHARMACEUTICAL TECHNIQUE AND PREPARATIONS. (3).

A continuation of Pharmacy 11 dealing with the more advanced theories and manipulations of pharmacy. Simple preparations are studied and prepared. Textbooks: *United States Pharmacopoeia; National Formulary. Two lecture and two laboratory hours a week; spring quarter. Laboratory fee, $5.00.* Professor Burlage; Assistants.

21. GALENICAL PHARMACY. (5). Prerequisite, Pharmacy 10, 11, 12.
The official galenicals are studied in the lectures. The laboratory work consists of the preparation of the more important types of official preparations. Textbooks: *United States Pharmacopoeia; National Formulary. Three lecture and four laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professor Burlage; Assistants.

22. INORGANIC PHARMACY. (5). Prerequisite, Chemistry 31.
The official inorganic compounds are studied. The laboratory work deals with the more important compounds and preparations involving chemical reactions. Textbooks: *United States Pharmacopoeia; National Formulary; New and Non-Official Remedies. Three lecture and four laboratory hours a week, winter quarter. Laboratory fee, $5.00.* Professor Burlage; Assistants.

23. ADVANCED GALENICAL PHARMACY. (3). Prerequisite, Pharmacy 21.
A continuation of Pharmacy 21, 22, with emphasis on the more difficult official preparations, especially those made by maceration and extraction. Textbooks: *United States Pharmacopoeia; National Formulary. Two lecture and two laboratory hours a week, spring quarter. Laboratory fee, $5.00.* Professor Burlage; Assistants.

83. ORGANIC PHARMACY AND NEW AND NON-OFFICIAL REMEDIES. (5). Prerequisite, Pharmaceutical Chemistry 71.
A course designed to familiarize the student with the official organic compounds and the more important organic compounds and their preparations recognized in *New and Non-official Remedies.* Textbooks: *United States Pharmacopoeia; National Formulary; New and Non-official Remedies. Five hours a week, spring quarter.* Professor Burlage.

90. PARASITICIDES. (3).
A course intended to supply information concerning the uses and methods of application of plant materials and chemicals used as insecticides, fungicides, parasiticides, and rodenticides. *Three hours a week, fall quarter.* Professor Rose.

91-92. DISPENSING. (10). Prerequisite, Pharmacy 23.
A study of the compounding and dispensing of prescriptions, including incompatibilities. Practice is required in preparing capsules, pills, powders, ointments, etc., until work is satisfactory. *Two lecture and six laboratory hours a week, fall and winter quarters. Laboratory fee, $7.50 a quarter.* Professor Rose.

93. DISPENSING. (3). Prerequisite, Pharmacy 91-92.
Continuation of Pharmacy 91-92. *One lecture and four laboratory hours a week, spring quarter. Laboratory fee, $5.00.* Professor Rose.

94. MANUFACTURING PHARMACY. (5). Prerequisite, Pharmacy 23.
The study and manufacture of pharmaceuticals, dentifrices, etc., with emphasis on the manipulation of machinery and apparatus used in the production of the same on a semi-commercial scale. *Two lecture and six laboratory hours a week, spring quarter. Laboratory fee, $10.00.* Professor Burlage.

95. HISTORY OF PHARMACY. (3).
A course designed to develop the historical background of pharmacy. Reports will be required that necessitate the use of the library and the preparation of bibliographies on the important figures and historical developments in the profession. *Three hours a week, winter quarter.* Professor Burlage.

96-97. COMMERCIAL PHARMACY. (6)
A practical consideration of retail store management and its problems. Executive control, organization, lay-out, merchandising, store policy, personnel, and other phases, including pharmaceutical jurisprudence, are dwelt upon. *Three hours a week, winter and spring quarters.* Professor Rose.

99. THEORETICAL PHARMACY. (5).
A course for seniors that is intended to bring together salient subject matter from materia medica, pharmaceutical chemistry, and pharmacy in order that highly important drugs may be studied from every angle. *Lectures and recitations, five hours a week, spring quarter.* Professor Beard.

141. ADVANCED DISPENSING. (5). Prerequisite, Pharmacy 91-92, 93.
Investigating problems connected with the compounding and dispensing of prescriptions. *One lecture and eight laboratory hours, any quarter. Laboratory fee, $10.00.* Professor Burlage.

144-145-146. ADVANCED MANUFACTURING PHARMACY. (15). Prerequisite, Pharmacy 83 and Pharmaceutical Chemistry 71.
A continuation of Pharmacy 83 emphasizing the manufacture and production of volatile oils and aromatic synthetics and their uses in perfumes, flavoring extracts, essences, toilet preparations, and cosmetics. *Two lecture and six laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Burlage.

162. MEDICINAL PLANT PRODUCTS AND THEIR PREPARATIONS. (5). Prerequisite, Pharmaceutical Chemistry 71 or equivalent.
Advanced studies of medicinal plant products emphasizing their constitution, formation, isolation, identification, preparations, and uses in medicines and other items relating to pharmacy. *Two lecture and six laboratory hours a week, winter quarter. Laboratory fee, $10.00.* Professor Burlage.

191-192-193. (9). STUDIES OF U. S. P. AND N. F. PREPARATIONS AND THEIR ASSAYS.
Special studies of these preparations with the aim of improving and assaying the same. *One lecture and four laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $5.00 a quarter.* Members of the Staff.

261-262-263. ADVANCED MEDICINAL PLANT PRODUCTS AND THEIR PREPARATIONS. (15). Prerequisite, Pharmacy 162 or equivalent.
A continuation of Pharmacy 162 with special emphasis on and problems dealing with the more complex medicinal plant products, with readings and discussions of the recent advances in this line of work. *Two lecture and six laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Burlage.

351-352-353. SEMINAR. (3).
Required of all graduate students. Reports and discussions relating to recent advances in all branches of pharmacy and related sciences. *One hour a week, fall, winter, and spring quarters.* Members of the Staff.

391-392-393. RESEARCH IN PHARMACY. (15).
Statements regarding Materia Medica 391-392-393 apply to this course. *One lecture and nine laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Burlage.